

## Preparation of metal phosphates with high surface area and the collection of Li from sea water using it

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Authors found out that  $\text{H}_{2.5}\text{Zr}_{1.5}\text{Cr}_{0.5}(\text{PO}_4)_3$  and  $\text{H}_{2.5}\text{Ti}_{1.5}\text{Cr}_{0.5}(\text{PO}_4)_3$  can recover  $\text{Li}^+$  ions from a solution of a very low concentration as a sea water by ion-exchange. In this study, preparation of porous materials, thin and thick layers on a base substances were studied. Bulk materials were prepared by the different calcination temperature. The samples calcined below 1000 °C was different from that calcined above 1000 °C in ion-exchange property. This is due to the different environment of ion-exchange sites derived from different crystal structure.

The optimum conditions in the preparation of homogeneous gel of Li-Zr-P-O system were determined. Thick layer of  $\text{LiZr}_2(\text{PO}_4)_3$  was obtained an  $\text{Al}_2\text{O}_3$  plate by the dip coating method. The H<sup>+</sup> ion exchanged layer sample collected Li<sup>+</sup> from sea water at a same rate of the powder sample. The layer sample has an advantages in the ease of handling.